

Fermented preparations for human consumption based on plant products have ethanol content of ≤ 0.1 vol. % while the spectrum of microflora present includes, at least two (preferably at least three) types of microorganisms selected from Acetobacter and/or Bifidobacterium and/or Lactobacillus and/or Leuconostoc and/or Saccharomycetaceae, provided that at least one of the types of microorganisms belongs to Acetobacter or Lactobacillus or Leuconostoc.



**Description of
DE19730538**

Result Page

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The invention relates to a fermenting preparation on vegetable basis, in particular a fermenting preparation with probiotischer suitability, as food in the definition of the 1 LbmG, which can be verzeherndes to the benefit, 1974, a related production process and a corresponding fermenting preparation.

Fermenting preparing, in particular fermenting preparing on vegetable basis, which address the human benefit feeling by their Schmackhaftigkeit, are for a long time known. In central and Western European culture area already are up as refreshment beverages for centuries beside the barley beer in its various types the market also beer-similar beverages on basis of other cereals than barley. Besides one knows on and out-fermented fruit juices (in Western Europe for the example apple wine, Apfelmost, grape/cluster wine, feather-white, berry wines and such a thing) and fermenting beverages, those by fermentation of Saccharoselösungen or honey water bottom addition fresh or dried plant parts of prepared becomes (for the example Gingerale, elder sparkling wine, Met).

In this connection also Gärungssessig is to call in particular apple vinegar which becomes recommended in water-diluted form as refreshment beverage.

The beverages, but the foods which can be assigned fermenting products on vegetable basis are not the usually bottom common salt additive of the Milchsäuregärung subjected vegetables and fruits. These are at quite present benefit value partly mainly food (sauerkraut, salt beans).

In other cases (in central and Western Europe for the example salt cucumbers) the fermenting foods become mainly not because of their Nährwerts but because of their Wohlgeschmacks estimated. They serve in small amount as spiceful Zuspense.

Fruchthaltige, the benefit serving liquid, semisolid or solid foods are the fermented milk products established on the food market. Basis is usually cow's milk, which becomes with corresponding microorganisms butter milk, thick milk, Kefir, Kumys, yoghurt, whey, quark, acidic milk and such reacted. Sporadically, but with increased tendency, come because of the health value sheep, goat and Stutenmilch to the use. The fruits, which are determining for the benefit value, become the finished fermented milk product as to a large extent sterile, bottom heat effect developed fruit preparation added.

Many of the aforementioned fermenting foods and - beverages, are milchhaltig or not, in newer time, if they contain living person cultures, increased than, due to their micro organism content, health-promoting them are particularly expenditure-praised. Newer medical findings, which emphasize the importance of an intact Mikroflora within the human organism, particularly within stomach intestine system, offer the scientific basis for it. To the designation of the vitalisierenden effect of living microorganisms on the food sector from medical/scientific side the adjective "probiotisch" found embossed, this term meanwhile into the advertising language of the food industry, in particular on the field of milk fermenting products, entrance.

Basis for this new assessment of the presence of living microorganisms in foods is a filling of works, those, as for the example R. Filler: "Probiotics - The Scientific Basics" ((1992) Chapman & Hall, London, New York, Tokyo), B. Gedek: "Regulation of the Darmflora over the food" central sheet for hygiene and environmental medicine ((1991) S. 277-301), G. Gibson, M. Roberfroid "Dietary modulation OF the human ones colonic Microbiota: Introducing the Concept OF Prebiotics " (1995) American journal OF Nutrition of volume. 125, pp 1401-1412) and His Excellency. Gilliland "Beneficial Relationships Between Certain Microorganisms and Humans: Candidate Microorganisms for Use as Dietary Adjuncts " (1979) journal OF Food Protection of volume. 42 p. 164 FF the need of the supply of suitable active microorganisms with the daily food stress. The maintenance of the human Mikroflora as vitally necessary ingredient of the organism is thereafter prerequisite for optimum operability and well-being.

The importance of the supply of microorganisms with the food with the recovery of Befindlichkeitsstörungen becomes the example in the subsequent works treated: G. Reid et al. in "Is there A role for Lactobacilli in prevention OF urogenital and intestinal infections" ((1990) Clinical and Microbiological Reviews of volume. 3 (4) pp 335-344): t C. Della Croce et al. "Antimutagenic Investigations on Commercial Yogurt", Antimutagenesis and Anticarcinogenesis Mechanisms III, OD. Bronzetti et al. Plenums press, New York and G.W. Elmer et al. "Biotherapeutic Agents" (1996) JAMA of volume. 275, p. 870 FF.

In view of the variety of the known in the trade available or in the private household fermenting preparing producible for the internal requirement, the assumption is obvious, a sufficient supply of living microorganisms in connection with the daily feeding and beverage supply can in the frame average Central European nourishing habits simple achieved become. This is meanwhile not the case.

To the one the health value, with other words the per bio tables suitability of a fermenting preparation at the type and amount, is of the living andable ble microorganisms coupled present in the consumption-finished state; on the other hand the frequency of the consumption arranges itself, if it not exclusive as therapeutic measure made, after the subjective in each case judged Wohlgeschmack and benefit value of the fermenting product. An other role plays the availability of the respective fermenting preparation, which again with the accessibility of the starting materials, the manufacture conditions in this connection, to which transport and shelf life and in the long run also the price have to do.

In the known, commercial fermenting preparing so far, also with Auslobung as per bio tables food could become, only a right minor proportion of active microorganisms detected. From the wide kind spectrum, which becomes for the human well-being for important considered, only a small cut out is present, usually limited itself the inventory on or two types in the respective product. Conventional fermenting foods and - beverages would not therefore only have to constitute a quantitatively significant portion of the daily food, but must the nourishing routine also the consumption of many various fermenting products contain, in order to guarantee the supply in a sufficient wide kind spectrum.

Shortcomings in the sensory qualities, in particular in the taste, and the presence negative appreciated Begleitbestandteile and/or additives lead to rarer consumption of probiotisch valuable foods, than it would be people and individual-health desirable.

With the so far available fermenting products Wohlgeschmack and sufficient shelf life are frequent with increased content at ethanol coupled, as for instance with wines or beers and beer-similar beverages for the example. Here the ethanol content already forbids a health quantitatively sufficient daily Mikroorganismenzufuhr. The "alcohol problem" sets anyway closest boundaries for the benefit of such fermenting products. This particularly concerns the consumption by children and young people.

In this respect harmless appear the common, more or less expressed sweet products on yogurt, quark or butter milk basis with or without fruit additive. Meanwhile also these meet, are them now with kinds of sugar or sugar substitutes prepared, straight concern significant in health-conscious circles. Also that plays relative high kalorische Nährwert of such products a role. This disadvantage

concerns more or less also all milk fermenting products without sweet additive, particularly since with these products increased Wohlgeschmack frequent accompanies with increased fat content. To Sicherstellung of the supply of living microorganisms over the food in the daily practice milk fermenting products are not suitable therefore.

Perfect excluded is the supply of microorganisms on the path over the known milk fermenting products also for the significant number of humans, who suffer a bottom corresponding food incompatibility.

Many of the fermenting preparing specified above, there is found on basis of milk or other basis, like addressed above, in the benefit-finished state besides only few or noable ble microorganisms more. This applies particularly to industrial finished beverages and -, for their marketableness durability criteria feed a large role play. The shelf life becomes achieved by genuine germ poverty of the final product (as for the example with wines, beers) or by additives, which restrain the activity of microorganisms general.

With increased known of the connections between well-being and human Mikroflora by own production of fermenting products in private households one met to this disadvantage. Preparing on milk basis stand thereby in the foreground. Fermentiergerätschaften and starter cultures for instance for yoghurt and Kefir are in the trade available or from private ones are passed on.

Although milk fermenting products of the private own production are superior to the conventional industrial products regarding the amount of active microorganisms, also they have the disadvantage of the high kalorischen Nährwerts.

Wasserkefir and Kombucha Teepilz beverage point, if them verzehrt in the natural state become, which up and, if they are proper fresh prepared with reliable starter cultures, relative large amounts of living, metabolicactive desired microorganisms do not contain high calorific value of the aforementioned milk products. But the experience shows that smell and taste of these products are felt of many consumers particularly with prolonged continuous, regular ingestion as unattractive to repulsive. Besides the significant ethanol content (Kefir can: depending upon kind of manufacture of 0.1 to 1.5 volume. - %, Kombucha: approx. 0.5 volume. - %) particularly with sensitive persons to the refusal lead. For humans with alcohol problems and for infants such fermenting beverages are anyway perfect inappropriate. Kombucha is fermented tea with active cultures

All known fermenting preparing which can be manufactured in the domestic range, above all so far it viable and metabolicactive microorganisms contained are, are afflicted with the disadvantage of labor intensive preparation and the need careful control of the fermentation process. The domestic yogurt preparing the equipments must become expenditure-cooked or on other manner sterilized. Also the storekeeping conventional, metabolicactive microorganisms of a contained fermenting preparation is not simple. There is the risk of a negative change of the micro organism spectrum with longer Kultivationsdauer. Particularly with not whole careful works made light settling with health and geschmacklich undesirable foreign germs.

Expensive one is likewise the preparation by Kefir and Kumys and in still expressed manner the domestic fruit wine production. In this latter case does not have only the labor of the approach, but also usually fermenting duration lasting for weeks and a supervised in purchase taken become. The products show up besides with the racking and bearings as fastidious.

With all that the per bio tables value of the aforementioned products from own production limited to the one by the kind poverty given also here and on the other hand is by those relative small amount of the present living microorganisms.

With, unpasteurisierten sauerkraut available in the trade and likewise commercial Sauerkrautsaft durable foods with probiotischer suitability on vegetable basis present are, them to some extent exhibit however disadvantages. Expressed the acidic/salty taste does not assure many humans in the long run. Besides also such milk-acidic vergorenes vegetable has only a relative kind-poor micro organism spectrum.

Likewise hardly durability problems there, however only in the unopened state, are in portion packings located milk fermenting products of the food industry. But no optimum source for a

sufficient micro organism supply is given also over the food here: these products do not contain the desired active microorganisms health as valuable recognized types usually of sufficient amount and diversity of species.

Bottom ecological aspects cannot such products because of the high packing expenditure likewise as without reservation recommendable classified become.

In view of these disadvantages of the state of the art the object of the instant invention consists of eliminating above all the before explained disadvantages of the state of the art and a fermenting preparation making a fermenting preparation suitable for it as well as a corresponding production process available it possible in particular

- excellent sensory properties,
- small kalorischen Nährwert,
- high content at vital materials and
- very small ethanol content

also for children and sensitive adult ones a suitable to make available to purposes of the benefit food in the sense of the 1 LbmG, which can be verzehrendes, 1974 that

- an high living person germ number of metabolicactive microorganisms from a variety of health desired, health as effective recognized types in the consumption-finished product exhibits,
- is to a large extent resistant against foreign germinating and beyond that both in the industrial scale and in the private household

- with small machine, timed and energetic effort inexpensive prepared will can and
- both when underlying fermenting preparation is more durable and and benefit-finished fermenting preparation excellent.

This object becomes by the fermenting preparation according to claim 1, the production process according to claim 9 and the fermenting preparation according to claim 10 dissolved. Convenient embodiments of the fermenting preparation correspond to the Unteransprüchen 2 to 8, convenient embodiments of the fermenting preparation the Unteransprüchen 10 to 17. The invention becomes appended more near explained on the basis selected examples from the underlying extensive test series:

Example 1

Fermenting preparations existing from 10 g to 30 g fructose, freeze dried viable microorganisms, cultures of Bifidobakterium longum, lactobacillus acidophilus, lactobacillus spec., wine and Kombucha yeast as well as 15 to 20 Sultaninen from controlled biological cultivation (kbA) were poured over in each case in each case in boltable, conventional with a commercial rinsing agent and hot water cleaned however not sterile glass vessels with in each case 1 l tap water (T= 18 DEG C) and left untouched at room temperature off the direct sunlight however otherwise without light exclusion at room temperature (tags 25 DEG C, at night 18 DEG C) with loosely put on, not tightened cap. Within 12 h, by rising the Sultaninen obvious, significant gas evolution began. Occasional one became the approach shaken. After two days the fermenting preparation with closed cap with 4 DEG C to 6 DEG C stored, it was consumed daily fermenting preparation in portions (200-500 ml) bottom Absieben of the Sultaninen removed and without other processing or additions as beverage. The fermenting preparation proved thereby as light opalisierendes, weak moussierendes beverage with light, wine-similar fragrance. The taste became coincident of the 25 subjects as pleasant mildfruchtig described. During the 5-tägigen storage time (refrigerator) no changes found became.

The ethanol content was with 0,04 volume. - was to %, the kalorische Nährwert about 52 kJ/100 ml (0.2). The fermenting preparation had the subsequent vital material balance:

```

<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Designation
<tb> Head Col 2: mg/100 ml drinkable fermenting preparation
<tb> acetic acid< September> 0,007
<tb> gluconic acid< CEL AL= D> 0,003
<tb>< /TABLE>
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Designation
<tb> Head Col 2: mg/100 ml drinkable fermenting preparation
<tb> Thiamin< September> 0,011
<tb> riboflavin< CEL AL= D> 0,041
<tb>< UCB AL= L> pantothenic acid< September> 0,166
<tb> nicotinic acid< September> 0,093
<tb> Pyridoxin< September> 0,028
<tb>< UCB AL= L> vitamin E< CEL AL= D> 0,115
<tb> Cobalamin< September> 0,002
<tb> biotin< September> 0,051
<tb> m-inositol< CEL AL= D> 0,031
<tb>< UCB AL= L> Folatkomplex< September> 0,006
<tb> Phyllochinon< September> 0,01
<tb> Paraaminobenzoessäure< CEL AL= D> 0,27
<tb>< UCB AL= L> vitamin C< September> 0,5
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<tb> Head Col 1: Designation
<tb> Head Col 2: mg/100 ml drinkable fermenting preparation
<tb> sodium< September> 17,1
<tb> potassium< CEL AL= D> 67,2
<tb>< UCB AL= L> phosphorus< CEL AL= D> 22,1
<tb> magnesium< September> 4,9
<tb> calcium< September> 29,3
<tb> zinc< September> 0,21
<tb>< UCB AL= L> iron< CEL AL= D> 1,01
<tb> silicon< September> 0,49
<tb> rubidium< September> 0,32
<tb> coppers< September> 0,002
<tb>< UCB AL= L> selenium< CEL AL= D> 0,0017
<tb> manganese< September> 0,027
<tb>< /TABLE>
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Designation
<tb> Head Col 2: mg/100 ml drinkable fermenting preparation
<tb> alanine< September> 55
<tb> valine< September> 36
<tb>< UCB AL= L> aspartic acid< CEL AL= D> 61
<tb> threonine< September> 42
<tb> arginine< September> 41
<tb> glycine< September> 53
<tb>< UCB AL= L> glow-amine-acidic< CEL AL= D> 18
<tb> leucines< September> 38
<tb> serine< September> 49
<tb> tyrosine< September> 25
<tb>< UCB AL= L> lysine< CEL AL= D> 45
<tb>< /TABLE>
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Designation

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<tb> Head Col 2: g/100 ml drinkable fermenting preparation
 <tb> egg white< September> 1,4
 <tb> fat< September> 0,05
 <tb>< UCB AL= L> of carbohydrates< CEL AL= D> 0,2
 <tb> glucose< September> < 0,1
 <tb> fructose< September> 0,7
 <tb> sucrose< CEL AL= D> < 0,1
 <tb>< UCB AL= L> maltose< September> < 0,1
 <tb> lactose< September> < 0,1
 <tb> D lactic acid< September> 0,01
 <tb> D+ lactic acid< CEL AL= D> 0,08
 <tb>< /TABLE>

The micro organism spectrum of the benefit-finished fermenting preparation provided itself on the average (20 approaches) as follows:

<tb>< TABLE> Columns= 2>
 <tb> Head Col 1: Microorganism
 <tb> Head Col 2: KBE/ml
 <tb> Bifidobacterium longum< September> 4.8,10< 6> 0.3,10< 6>
 <tb> Lactobacillus acidophilus< September> 1.1,10< 7> 0.5,10< 7>
 <tb> Lactacillus spec.< September> 4.2,10< 6> 0.2,10< 6>
 <tb> Saccharomyces spec.< September> 1.0,10< 7> 0.1,10< 7>
 <tb> Kombucha yeast< CEL AL= L> 1.3,10< 7> 0.2,10< 6>
 <tb>< /TABLE>

In the TTC test a significant Extinction of measured and so the metabolic activity of the microorganisms in the benefit-finished fermenting preparing after example 1 on the basis its Dehydrogenaseaktivität confirmed became.

Example 2

The fermenting beginnings corresponded to 1, it in all example with Sultaninen from conventional cultivation were only worked.

Up to a significant slower insertion of the fermentation and a süßlicheren taste of the fermenting preparation after 2-tägiger fermentation no differences to example 1 were to be registered. The sweet taste lost itself during the 5-tägigen life of the fermenting preparing.

The ethanol content was after 2-tägiger fermenting time about 0,04 volume. - Rose % it after 4-day fermenting time on 0,06 volume. - %.

The kalorische Nährwert was with 56 kJ/100 ml after 2-tägiger fermentation.

Example 3

200.5 g of a fermenting preparation existing Leuconostoc contained from 0,5 g of a combination from viable freeze dried microorganisms cremoris (0.32 g), Acetobacter xylinum (0.07 g), lactobacillus casei (0.14 g) and Saccharomyces cerevisiae (0.07 g) and 200 g sucrose became in 25 l fermenting tank a ginger fresh with 7 l water, 8 l clear apple juice and 50 g with 22 DEG C during 24 h fermented. Afterwards the benefit-finished fermenting preparation became in actual known manner on 0,75 l-bottles with screw-type cap drawn.

It resulted a weak moussierendes, hardly cloudy, palely amber beverage with ginger-typical spicy, light harsh taste.

The ethanol content was with 0,06 volume. - %

The kalorische Nährwert was with 74 kJ/100 ml.

The fermenting preparation was in the unopened bottles at least 3 weeks more durable. After opening the shelf life amounted to with + 6 DEG C a week. Afterwards an increased geschmackliche

flattening became found.

The micro organism spectrum of the benefit-finished fermenting preparation was on the average (10 approaches) as follows:

```
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Microorganism
<tb> Head Col 2: KBE/ml
<tb> Leuconostoc cremoris< September> 3.8,10< 6> 0.1,10< 6>
<tb> Acetobacter xylinum< CEL AL= L> 1.0,10< 6> 0.5,10< 6>
<tb> Lactobacillus casei< September> 5.1,10< 6> 0.3,10< 6>
<tb>< UCB AL= L> Saccharomyces cerevisiae< September> 1.4,10< 7> 0.1,10< 7>
<tb>< /TABLE>
```

Example 4

A fermenting preparation existing from freeze dried, viable *Saccharomyces cerevisiae* (0.03 g), freeze dried, viable commercial *Acetobacter pasteurianum* (0.01 g) and 6 g maltose as well as 4 g powdered Blockmalz was poured over with 1 l water by room temperature (T = 25 DEG C), which boiled up with 5 g dried female hop blooms, filtered and then cooled was. Fermentation in a conventional cleaned, not sterile glass container with put on, not bolted on cap with 15 DEG C fermented.

Approaches of this type supplied after 4 days a light moussierendes, cloudy amber fine-bitter beverage, which was felt of the subjects particularly in cooled state as pleasant recreating.

The micro organism spectrum of the fermenting preparing in accordance with example 4 was on the average as follows:

```
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Microorganism
<tb> Head Col 2: KBE/ml
<tb> Acetobacter pasteurianum< September> 1.4,10< 5> 0.06,10< 5>
<tb> Saccharomyces cerevisiae< September> 1.8,10< 7> 0.9,10< 7>
<tb>< /TABLE> the ethanol content was about 0,08 volume. - %
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The kalorische Nährwert was with 105 kJ/ 100 ml.

Example 5

A fermenting preparation existing freeze dried *Acetobacter spec* viable from 1 g of a combination. (in actual known manner out in the nature found game trunks cultured and selected), *Bifidobacterium bifidus* (commercial), *Saccharomyces spec.* (corresponding example 4) Torulahefen (commercial), 5 g lactose and 3 g fructose became with approx. in each case. 30 g unzerkleinerten drying plums and 250 ml tap water in a porcelain container at room temperature a covered day prolonged left untouched.

The taste that bottom these conditions poured drying plums became as pleasant fresh and fruit-industrial union-aromatic described.

To the determination of the ethanol content the poured drying plums with the remaining source liquid were püriert.

The ethanol content was with 0,04 volume. - %.

The approaches became bottom addition of two spice carnations and a 1 cm each prolonged piece Stangenzimt repeated. The taste that bottom these conditions poured drying plums was particularly gladly enjoyed as pleasant full-of age, spiciful described and as addition to conventional yoghurt.

By careful drying that bottom these fermenting conditions poured drying plums became a tasty drying fruit product with suitability as probiotisch valuable snack recovered.

Example 6

It became in each case a fermenting preparation existing freeze dried microorganisms viable from 0,126 g of the subsequent combination

```
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Type
<tb> Head Col 2: Amount
<tb> Leuconostoc lactis< September> 0.015 g
<tb> lactobacillus salivarius< September> 0.020 g
<tb>< UCB AL= L> Bifidobacterium bifidus< September> 0.035 g
<tb> lactobacillus plantarum< September> 0.046 g
<tb>< UCB AL= L> Schizosaccharomyce pombe< September> 0.002 g
<tb> Saccharomycodes ludwigii< September> 0.005 g
<tb> Torula delbrueckii< September> 0.003 g
<tb>< /TABLE> with 1 l tap water and 10 g maple syrup attached. The fermenting temperature
amounted to 18 DEG C, the fermenting time of 3 days. One worked with various vegetable
additions:
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```
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Addition
<tb> Head Col 2: Taste
<tb> A. Datteln (10 g)< September> recreating
<tb> b. Tockenfeigen (10 g)< CEL AL= L> fruit-industrial union-fresh
<tb>< UCB AL= L> C. Drying fig (5 g) + fresh apple (5 g)< September> aromatic-fresh
<tb> D. Sultaninen (5 g) + fresh plum (5 g)< CEL AL= L> harshsäuerlich
<tb> e. Pfirsich* (10 g) + fresh ginger (0.5 g)< September> aromaticpikant
<tb> f. Topinambur (10 g) + raisins (3 g)< September> mild-aromatic
<tb> G. Green dte extract (1 g) + Ginseng extract (0.5 g)< CEL AL= L> kind-typical
<tb>< UCB AL= L> * Konserve
<tb>< /TABLE>
```

The ethanol content of the fermenting preparing after example 6a. - g. was about 0,03 volume. - %, the kalorische Nährwert 42 kJ/100 amounted to ml to 85 kJ/100 ml. None of the fermenting preparing a white distinct acidic taste up. The lactic acid content was to 1 between 0,4 g/l and g/l, with the plurality of the samples around 0,7 g/l.

Example 7

A fermenting preparation existing freeze dried microorganisms viable from 0,135 g of the subsequent combination

```
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Type
<tb> Head Col 2: Amount
<tb> Bifidobacterium bifidum< September> 0.035 g
<tb> lactobacillus acidophilus< CEL AL= D> 0.040 g
<tb>< UCB AL= L> lactobacillus casei< September> 0.025 g
<tb> lactobacillus salivarius< September> 0.020 g
<tb> Leuconostoc casei< CEL AL= D> 0.015 g
<tb>< /TABLE> with 10 g lactose became in 1 l tap water bottom addition of approx. 12 g
Sultaninen (kbA) with temperatures between 18 DEG C and 22 DEG C of three days prolonged
fermented. Afterwards the Sultaninen was abgesiebt. It resulted a nearly complete clear, colorless,
silent fermenting preparation, which exhibited a pleasant, neutral fresh taste. The micro organism
spectrum of the fermenting preparation after example 7 was on the average (10 approaches) as
follows:
```


<tb> < TABLE> Columns= 2>

<tb> Head Col 1: Microorganism

<tb> Head Col 2: KBE/ml

<tb> Bifidobacterium longum< September> 2.4,10< 6> 0.5,10< 6>

<tb> lactobacillus acidophilus< September> 1.2,10< 7> 0.9,10< 6>

<tb> lactobacillus casei< September> 3.8,10< 6> 0.6,10< 6>

<tb> lactobacillus salivarius< September> 7.1,10< 6> 0.8,10< 6>

<tb> Leuconostoc casei< CEL AL= L> 2.9,10< 6> 0.4,10< 6>

<tb> < /TABLE> the ethanol content of this fermenting preparation amounted to < 0.01 volume. - %.

The replacement of Leuconostoc casei by Acetobacter types resulted in an analogue result.

With all example beginnings the effected increase of the fermenting temperature (30 DEG C-37 DEG C) a significant acceleration of the fermentation process. The finished fermenting preparing exhibited however geschmackliche disadvantages, compared with the fermenting preparing recovered at lower fermenting temperatures became them of the subjects as few aromatic and depending upon fermenting duration than flat to säuerlich sharp classified.

In trains of the invention provided it itself out that the Wohlgeschmack of the fermenting preparing at the number and diversity of species of the present microorganisms, also is coupled within a genus.

Geschmacklich most pleasantly became coincident those judged with the hefehaltigen fermenting preparing, the so called Saccharomyces spec. contained. These Saccharomyces spec. is a not uniform group. For the purposes of the invention they become problem-free in actual known manner by cultivation and selection from game yeasts accessible, which domestic game fruits, in particular potato berries to mount. Geschmacklich are particularly favourably Saccharomyces spec., which become recovered of domestic forest berries.

These Saccharomyces spec. correspond in their biochemical specification to the Saccharomyces boulardii at Litschii fruits discovered, and regarding their health importance scientific processed is (see for the example T. Friedland, J. Seiffert in "ecological system intestine II" (1990) Springer Verlag, Berlin, Heidelberg, New York, Tokyo).

Commercial available micro organism cultures in freeze dried form proved as problem-free more insertable for fermenting preparing and fermenting preparations according to the invention. It provided itself however in the course of the experiments to the practical application of the invention out that not only in the case of Saccharomyces, but also in the case of all other involved microorganisms the use of immediate wild types selected recovered from the nature in actual known manner other-cultured and geschmacklich brings the best results.

The fermenting preparing after examples 1 to 6 were confronted conventional probiotisch used fermenting preparing in long-term taste tests. In each case 20 subjects took 10 days to prolonged daily 1 glass each (SIMILAR 200 ml) or firing moose (SIMILAR 100 g) of the respective fermenting preparation to itself. It became per day the percentage of the subjects found, who classified the fermenting preparation as geschmacklich responsive. The result presents itself as follows:

EMI17.1

The range of variation of the micro organism spectrum in the fermenting preparing according to invention proved as extraordinary large.

The presence disturbed additional types from additional genera (for the example: Endomyces, Kloeckera, streptococcus, Torulopsis and other more) in the fermenting preparation in none of the test cases the positive result regarding taste and shelf life. It became observed that in the fermenting preparing according to invention a variety more useful, mutual symbiotisch promoting cultures to adjust itself, which are to a large extent independent of the basis combination of microorganisms in the used in each case fermenting preparation.

Breakdown cultures become according to invention automatic according to experience suppressed in the fermenting preparing. Thus about so far the formation of Kahlmhefen became observed in no case.

The per bio tables value of the good-tasting fermenting preparing according to invention the subsequent confrontation shows:

Results of the microbiological content regulation EMI 18.1

For the increase of the vital material content beyond the Stoffwechselprodukte of the present microorganisms and to the geschmacklichen variation it is easily possible to add to the fermenting preparing according to invention of mineral salts. Depending upon application purpose an other increase in value is possible by introduction of additional mono and/or oligosaccharides. Here those are to be called recently as health useful recognized Oligofruktosen for the example.

Beside the viable microorganisms also Lyophilisate of microorganisms can be present in the here described fermenting preparation. Thus the fermenting preparing can become special requirements situations up to the particular therapy company adapted.

Taste and vital material variations can be obtained also, as in example 6 shown, by vegetable additions, in particular freshness or drying fruits, in addition, honey, malt, molasse, maple syrup and such a thing. Geschmackliche alternation can likewise bring the addition of spices, to preferably vegetable spices. Exotic spices are as for instance ginger, spice carnations, Zimt and such just as more insertable as domestic herbs. It is of course also possible to add the fermenting preparing according to invention milk or milk products or it with other geschmacklich suitable foods, about fruit compotes, to mix.

The invention possible thereby sensory satisfactory per bio tables a supply, whereby the available fermenting preparing cover a large geschmackliches and microbiological spectrum, are alcohol-poor and so designed to become to be able that they exhibit very low kalorische calorific values.

The corresponding fermenting preparations according to invention make the preparation of the corresponding fermenting preparing simple consumer friendly and, for own production and supply attitude are equally problem-free.

Thus in the examples the 1 to 6 fermenting preparations specified, contained freeze dried, living microorganisms proved, itself with dry storage in sealed vessels or air and humidity-impervious coated welded shut transparency bags without cooling over at least 12 months as storable. In 2-wöchentlichen distances removed samples, shown judgment, in the alcohol and/or lactic acid content, sensory over the entire attempt duration of storage of 12 months no significant changes in that, in the spectrum of the present microorganisms and in their fermenting behavior with the Weiterkultivationsversuch.

Fermenting preparations according to the invention can be made available in various form. Like that it is possible, freeze dried living microorganisms in selection according to invention with or several fermentable sugars and other dry added if necessary like Oligofruktosen in portion bags to offer. It proves as practical, in form of a kit OF parts other with preparation of the fermenting preparation according to invention added like drying fruits, spices and such a thing in the same packaging unit to offer.

Particularly simple manageably is fermenting preparations, which are so adjusted that them in the fresh beginning an entire germ content of at least $1.1 \cdot 10^4$ KBE/ml exhibit, whereby in the underlying fermenting preparation if necessary present Saccharomycetaceae with $3.5 \cdot 10^3$ to $9 \cdot 10^3$ KBE/ml and if necessary present microorganisms of the genus lactobacillus in amounts of $1.2 \cdot 10^5$ to $4 \cdot 10^5$ KBE/ml involved are.

Also in the form of drying fruits in corresponding, prepared with microorganisms, air and dampproof package can the fermenting preparations to the preparation of the fermenting preparation according to invention be present. In this form the fermenting preparation is suitable not only to the preparation of a drinkable fermenting preparation, but serves also direct as

probiotisch valuable, very good-tasting, particularly as light manageable snack suitable, fermenting food.

The good shelf life of the fermenting preparing according to invention possible also the selling industrial prepared, finished drinkable fermenting preparing according to invention than alcohol-poor refreshment beverage. In view of the small energy and apparatus expenditure with to a large extent arrears-free preparation (small seizure besides kompostierbarer vegetable residues) advantages result compared with conventional refreshment beverages also in ecological respect.